REMARKS

By this Amendment, claims 1-26 are cancelled, and claims 27-50 are added. Thus, claims 26-50 are active in the application. Reexamination and reconsideration of the application are respectfully requested.

The specification and abstract have been carefully reviewed and revised to correct grammatical and idiomatic errors in order to aid the Examiner in further consideration of the application. The amendments to the specification and abstract are incorporated in the attached substitute specification and abstract. No new matter has been added.

Also attached hereto is a marked-up version of the substitute specification and abstract illustrating the changes made to the original specification and abstract.

In item 4 on page 2 of the Office Action, claims 1-26 were objected to because the terms "at least one of" or "one of" and a subsequent series of recited elements in the claims were joined with the conjunction "and". The Examiner has required the terms "at least one" or "one of" be followed by the conjunction "or" instead of "and". Accordingly, in response to the Examiner's requirement, the conjunction "or" has been used following each instance of "at least one of" in claims 1-26 so as to include one or more of the recited elements following the terms "at least one" within the scope of the claims. Similarly, in response to the Examiner's requirement, the conjunction "or" has been used in claims 1-26 following each instance of "one of" so as to include one of the recited limitations following the terms "one of" within the scope of the claims. Accordingly, having complied with the Examiner's requirement, the Applicants respectfully request the Examiner to withdraw the objection to the claims.

In item 6 on page 2 of the Office Action, claims 1-5, 9-11, 14-18 and 22-24 were rejected under 35 U.S.C. § 102(e) as being anticipated by Xydis (U.S. 6,307,471). This rejection is believed to be moot in view of the cancellation of claims 1-26. Furthermore, the Applicants respectfully submit that this rejection is inapplicable to new claims 27-50 for the following reasons.

An object of present invention is to provide an information processing system, an information processing apparatus and a control method for controlling the information processing

system and apparatus to be capable of preventing the surreptitious reading, falsifying and/or erasing of data stored in the information processing apparatus or an information terminal which the information processing apparatus is operable to communicate with.

The present invention, as recited in new claim 27, achieves this object by providing an information terminal for performing radio communication with an information processing apparatus. The information terminal of new claim 27 comprises a first input unit operable to accept an input operation and to output a signal responsive to the input operation, and a processing unit operable to process the signal outputted from the first input unit and to generate an output signal. The information terminal of new claim 27 also comprises a communication unit operable to convert the output signal and to transmit the converted signal to the information processing apparatus. The information terminal as recited in new claim 27 is operable to disable one of a start or a function of the information processing apparatus responsive to the input operation.

The present invention, as recited in new claim 39, also achieves the stated object by providing a control method for an information terminal for performing radio communication with an information processing apparatus. The control method of new claim 39 comprises accepting an input operation and outputting a signal responsive to the input operation, and processing the signal outputted in the outputting of the signal and generating an output signal. The control method of new claim 39 also comprises converting the output signal and transmitting the converted signal to the information processing apparatus, and disabling one of a start or a function of the information processing apparatus responsive to the input operation.

The present invention, as recited in new claim 36, also achieves the stated object by providing an information processing system including an information terminal and an information processing apparatus which are operable to perform radio communication with each other. The information terminal of the information processing system of new claim 36 comprises a first input unit operable to accept an input operation and to output a signal responsive to the input operation accepted by the first input unit, a processing unit operable to process the signal outputted from the first input unit and to generate an output signal, and a communication unit

operable to convert the output signal and to transmit the converted signal to the information processing apparatus. The information processing apparatus of the information processing system of new claim 36 comprises a transmitting and receiving unit operable to perform radio communication with the information terminal, a locking unit operable to disable one of a start or a function of the information processing apparatus, and one of a field strength detector operable to measure a field strength of a received signal transmitted from the information terminal or a location detector operable to detect a location of the information processing apparatus. The information processing apparatus as recited in new claim 36 also comprises an out-of-range determining and informing unit operable to judge one of the field strength of the received signal or the detected location of the information processing apparatus, and to output a notice signal to the locking unit when one of the measured field strength of the received signal or the detected location of the information processing apparatus is out of a predetermined range. Further, as recited in new claim 36, the locking unit of the information processing apparatus is operable to be activated by one of the input operation accepted by the first input unit or the notice signal outputted from the out-of-range determining and informing unit of the information processing apparatus.

The present invention, as recited in new claim 44, also achieves the stated object by providing a control method for an information processing system for controlling an information terminal and an information processing apparatus to mutually perform radio communication with each other. In the information processing apparatus, the control method of new claim 44 comprises receiving a radio signal transmitted from the information terminal, outputting a notice signal responsive to at least one of a field strength of the received radio signal transmitted from the information terminal or a location of the information processing apparatus, and disabling one of a start or a function of the information processing apparatus responsive to the notice signal outputted in the outputting of the notice signal. In the information terminal, the control method of new claim 44 comprises accepting an input operation inputted to the information terminal and outputting a signal responsive to the input operation inputted to the information terminal, processing the signal outputted in the outputting of the signal responsive to the input operation

inputted to the information terminal and generating an output signal, converting the output signal and transmitting the converted signal to the information processing apparatus, and disabling one of a start or a function of the information processing apparatus responsive to the input operation inputted to the information terminal.

The present invention, as recited in new claim 47, also achieves the stated object by providing a control method for an information processing apparatus for performing radio communication with an information terminal. The control method of new claim 47 comprises measuring a field strength of a received signal transmitted from the information terminal, and judging the measured field strength of the received signal and outputting a notice signal when the measured field strength of the received signal is judged to be out of a predetermined range. Further, the control method of new claim 47 also comprises disabling one of a start or a function of the information processing apparatus responsive to the notice signal outputted in the outputting of the notice signal.

Xydis discloses a method for transmitting a signal 10 such as radio waves between a token 12, e.g., a badge or a pager, that a user 16 wears and an electronic device 14, e.g., a personal computer. Xydis discloses that the signal 10 is capable of being mutually transmitted between the token 12 and the electronic device 14 to authorize the user to access the electronic device 14.

Xydis discloses that the token 12 transmits the signal 10 to antennas 18 of the electronic device 14, and the strength of the signal 10 is then measured at each of the antennas 18. If the maximum signal strength of the signal 10 that is detected at the antennas 18 does not exceed a predetermined operational threshold, the user is prohibited from accessing the electronic device 14 (see Column 3, lines 22-25 and Column 4, lines 5-9). However, if the maximum signal strength of the signal 10 that is detected at the antennas 18 exceeds a predetermined operational threshold, the data of the signal 10 is then compared to a user code database. If the data of the signal 10 that exceeds the predetermined operational threshold matches a user code in the user code database of the electronic device 14, the electronic device 14 is enabled and the user is granted access to the electronic device 14 (see Column 3, line 66 to Column 4, line 5). However,

Xydis also discloses that if the data of the signal 10 that exceeds the predetermined threshold does not match a user code in the user code database of the electronic device 14, the user is prohibited from accessing the electronic device 14 (see Column 4, lines 2-5). The signal strength of the signal 10 is measured by the degree of proximity the user is to the electronic device 14.

Xydis also discloses that if more than one user is authorized to operate the electronic device 14, the electronic device 14 can only be operated by the first user who logged into the electronic device 14 (computer) by entering a password or another method of authorizing a user's identity after the user was granted access when the user's token 12 was in close enough proximity to the electronic device 14 so as to grant the user access to the electronic device (see Column 4, lines 22-27).

Accordingly, Xydis merely discloses a method for determining whether the token 12 worn by the user is in close enough proximity to the electronic device 14 so as to grant the user access to the electronic device 14 if the data included in the signal 10 transmitted from the token 12 matches a user code in the user code database of the electronic device 14. Furthermore, Xydis discloses that the token 12 transmits only programmed data to the electronic device 14 (see Column 2, lines 37-38). Accordingly, non-programmed data, such as key entry data, cannot be transmitted to the electronic device 14. Furthermore, the token 12 does not have an input unit through which the wearer of the token can enter key entry data. Therefore, an authorized user whose user code is incorrect through no fault of the user, for example, cannot access the electronic device 14, and Xydis, by not being able to transmit non-programmed data, cannot allow the otherwise authorized user to access the electronic device 14 by entering a correct user code.

Therefore, Xydis clearly does not disclose or suggest the first input unit operable to accept an input operation, wherein the information terminal (the token) is operable to disable one of a start or a function of the information processing apparatus (the electronic device) responsive to the input operation, as recited in new claim 27. Similarly, Xydis also clearly does not disclose or suggest accepting an input operation and disabling one of a start or a function of the information processing apparatus responsive to the input operation, as recited in new claim 39.

Moreover, Xydis also does not disclose or suggest accepting an input operation inputted to the information terminal, and disabling one of a start or a function of the information processing apparatus responsive to the input operation inputted to the information terminal, as recited in new claim 44.

Therefore, the Applicants respectfully submit that Xydis clearly does not anticipate new claims 27, 39 and 44 since Xydis does not disclose each and every limitation of new claims 27, 39 and 44.

Similarly, Xydis also does not disclose or suggest the first input unit of the information terminal as recited in new claim 36. Xydis also does not disclose or suggest the locking unit of the information processing apparatus of new claim 36 which is operable to be activated by one of the input operation accepted by the first input unit or the notice signal outputted from the out-of-range determining and informing unit of the information processing apparatus.

Therefore, the Applicants respectfully submit that Xydis clearly does not anticipate new claim 36 since Xydis does not disclose each and every limitation of new claim 36.

Further, Xydis does not disclose or suggest a control method for an information processing apparatus (electronic device) for performing radio communication with an information terminal (token), where the control method comprises measuring a field strength of a received signal transmitted from the information terminal, judging the measured field strength of the received signal and outputting a notice signal when the measured field strength of the received signal is judged to be out of a predetermined range, and disabling one of a start or a function of the information processing apparatus responsive to the notice signal outputted in the outputting of the notice signal, as recited in new claim 47.

Therefore, the Applicants respectfully submit that new claim 47 is clearly not anticipated by Xydis since Xydis fails to disclose each and every limitation of new claim 47.

Accordingly, for the foregoing reasons, the Applicants respectfully submit that new claims 27, 36, 39, 44 and 47 are clearly not anticipated by Xydis since Xydis clearly fails to disclose each and every limitation of new claims 27, 36, 39, 44 and 47. Therefore, the

Applicants respectfully submit that new claims 27, 36, 39, 44 and 47 are clearly allowable over Xydis.

In item 16 on page 8 of the Office Action, claims 6-8, 12-13, 19-21 and 25-26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Xydis in view of O'Mahony (U.S. 6,457,129). As described above, Xydis clearly does not disclose or suggest each and every limitation of new claims 27, 36, 39, 44 and 47. For the following reasons, the Applicants respectfully submit that O'Mahony does not cure the deficiencies of Xydis for failing to disclose each and every limitation of new claims 27, 36, 39, 44 and 47.

O'Mahony discloses a method and apparatus for securely protecting a computer by monitoring the location of the computer to determine if the computer is in an authorized location according to authorized locations that are stored in a database of the computer. The security system of O'Mahony is self-contained in the computer itself (see Column 3, lines 55-65), and therefore, the security system does not interact with another electronic device to disable the computer. O'Mahony discloses that the security system is able to track the location of the computer by using a global positioning system (GPS). When the self-contained security system of the computer detects that the present location of the computer is not in an authorized location, the computer disables users from accessing the computer.

However, O'Mahony clearly does not disclose or suggest an information terminal having a first input unit which is operable to accept an input operation, wherein the information terminal is operable to disable one of a start or a function of an information processing apparatus responsive to the input operation, as recited in new claim 27. Similarly, O'Mahony also clearly does not disclose or suggest a control method for an information terminal which comprises accepting an input operation and disabling one of a start or a function of the information processing apparatus responsive to the input operation, as recited in new claim 39. Moreover, O'Mahony also does not disclose or suggest accepting an input operation inputted to the information terminal, and disabling one of a start or a function of the information processing apparatus responsive to the input operation inputted to the information terminal, as recited in new claim 44.

Furthermore, O'Mahony also does not disclose or suggest the first input unit of the information terminal, as recited in new claim 36, or the locking unit of the information processing apparatus of new claim 36 which is operable to be activated by one of the input operation accepted by the first input unit or the notice signal outputted from the out-of-range determining and informing unit of the information processing apparatus.

In addition, O'Mahony does not disclose or suggest a control method for an information processing apparatus for performing radio communication with an information terminal, where the control method comprises measuring a field strength of a received signal transmitted from the information terminal, judging the measured field strength of the received signal and outputting a notice signal when the measured field strength of the received signal is judged to be out of a predetermined range, and disabling one of a start or a function of the information processing apparatus responsive to the notice signal outputted in the outputting of the notice signal, as recited in new claim 47.

Therefore, the Applicants respectfully submit that O'Mahony clearly does not cure the deficiencies of Xydis for failing to disclose each and every limitation of new claims 27, 36, 39, 44 and 47.

Accordingly, because of the clear distinctions discussed above, the Applicants respectfully submit that no obvious combination of Xydis and O'Mahony would result in the inventions of new claims 27, 36, 39, 44 and 47 since Xydis and O'Mahony, either individually or in combination, clearly do not meet each and every limitation of new claims 27, 36, 39, 44 and 47. Furthermore, it is submitted that the distinctions are such that a person having ordinary skill in the art at the time the invention was made would not have been motivated to modify Xydis and O'Mahony in such a manner as to result in, or otherwise render obvious, the present invention as recited in new claims 27, 36, 39, 44 and 47. Therefore, it is submitted that new claims 27, 36, 39, 44 and 47, as well as new claims 28-35, 37-38, 40-43, 45-46 and 48-50 which depend therefrom, are clearly allowable over the prior art as applied by the Examiner.

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is clearly in condition for allowance. An early notice thereof is respectfully solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, it is respectfully requested that the Examiner contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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THE COMMISSIONER IS AUTHORIZED TO CHARGE ANY DEFICIENCY IN THE FEES FOR THIS PAPER TO DEPOSIT ACCOUNT NO. 23-0975

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Information processing system, information processing apparatus, information terminal, and method for control thereof

FIELD OF THE INVENTION

The present invention relates to an information processing system which includes a plurality of~~including plural~~ devices for radio communications, an information processing system comprising a global positioning system (GPS), and a method for controlling~~control of~~ these systems.

BACKGROUND OF THE INVENTION

Recently in~~In~~ the communications~~communication~~ field,~~ recently, the~~ radio communication technology and its devices are being offered at lower prices, and the information processing apparatus and system are widely being utilized~~spreading~~ for making radio communications between personal computers (PCs), between a PC and peripheral devices~~,~~ or between information terminals other than PCs, and for transmitting information and controlling devices.

In particular, as a result of the enhancement in the~~of~~ integration technology of electronic components, the development of small and high performance batteries~~,~~ and the development of new materials for use in the casing, the information processing apparatus is smaller in size and lighter in weight, and the information processing apparatus is further advanced in portability. Accordingly, the opportunities for~~of~~ digital radio communications between a portable device and a stationary device are increasing.

In such a manner of use, a portable device "A" sends an instruction to an installed device "B" by radio communication. The device "B" processes

according to the instruction, and sends the result to the device "A". It seems as if all operations were only done in the portable device "A"~~-only~~.

In this conventional system, however, the device which is installed at a remote place may be stolen, or~~-the~~ important data may be read, falsified, or erased surreptitiously.

Moreover,~~Besides~~ the portable device, which is smaller and lighter than a desktop computer, may be lost or stolen easily. In the same manner as in the case of the installed device, ~~the~~ important data may be read, falsified, or erased surreptitiously.

SUMMARY OF THE INVENTION

In view~~the light~~ of the above-described~~above~~ problems, it is therefore~~hence~~ an object of the invention to provide an~~present~~ information processing system and apparatus and a method for controlling the system and apparatus to be~~its control method~~ capable of preventing surreptitious reading, falsifying and erasing of data.

For this purpose, in the event of a communication failure between information devices due to problems~~trouble~~ in radio communication systems~~system~~ or the like during information processing by using radio communications between the information devices, the data display and input operation in the information devices are stopped.

The information processing system of the present invention is an information processing system which contains~~containing~~ an information processing apparatus having a radio transmitting and receiving unit, and an information terminal such as a portable device. A received wave strength measuring unit which measures~~of~~ the strength of a radio wave that is transmitted from the information terminal and received in the information

processing apparatus is provided in the information processing apparatus. The measuring unit allows~~It is judged if~~ the strength of the received radio wave to be judged (determined) of the received radio wave is within a predetermined range or not. If the strength of the received radio wave is not within the predetermined range, an out-of-range informing signal is generated, and the function of the information processing apparatus is stopped, or ~~a start of~~ the information processing apparatus may be~~is~~ locked (prohibited) from starting.

Also, by similarly providing~~disposing~~ a received wave strength measuring unit in the information terminal, ~~similarly,~~ the operation of the information terminal may be stopped or the information~~its start~~ may be locked from starting.

Further, instead of the received wave strength measuring unit, a GPS receiver may be installed in either~~the~~ apparatus so that the present position of the either apparatus can be detected. While judging~~Judging~~ if the present position of the other apparatus is within a predetermined range or not, if the result shows that the other apparatus is out of the predetermined range, an out-of-range informing signal is generated. As a result, in the apparatus in which~~incorporating~~ the GPS is provided, the operation of the other apparatus may be stopped or the other apparatus~~its start~~ may be locked from starting.

Moreover, by transmitting a password by the radio transmitting and receiving unit, the information processing apparatus~~it~~ may be designed so as to start and stop the operation of the functions~~function~~ of the receiving side apparatus, or to start and stop the functions of both of the apparatuses totally.

Further a GPS receiver may be installed in a single device, and the present position of the device may be detected so as to judge whether~~if~~ the present position of the device is within a predetermined range or not from the other apparatus. Depending on the result, the device~~it~~ may be designed to

start and stop the operation of the function of this apparatus, or to start and stop the functions of both of the apparatuses totally.

The apparatus control method includes ~~the~~ steps corresponding to the above-described~~above~~ modes of the information processing system and apparatus.

Thus, according to this information processing system and apparatus control method, if two information processing devices for mutual radio communications are not in the predetermined range, or if the received password is not matched, the function of the apparatus is stopped, or both of the~~starting of whole~~ apparatuses is stopped from ever starting. Accordingly, the present invention~~It hence~~ prevents surreptitious reading, falsifying and erasing of the data that is stored in the apparatuses.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1A is a block diagram of an information processing system according to a first~~in~~ embodiment ~~1~~ of the present invention.

Fig. 1B is a block diagram of another~~other~~ example of the information processing system of the first~~in~~ embodiment ~~1~~ of the present invention.

Fig. 2 is a flowchart showing the operation control method of the first~~in~~ embodiment ~~1~~ of the present invention.

Fig. 3A is a block diagram of an information processing system according to a second~~in~~ embodiment ~~2~~ of the present invention.

Fig. 3B is a block diagram of another~~other~~ example of the information processing system of the second~~in~~ embodiment ~~2~~ of the present invention.

Fig. 4 is a flowchart showing the operation control method of the second~~in~~ embodiment ~~2~~ of the present invention.

Fig. 5 is a block diagram of an information processing apparatus

according to the third~~in~~ embodiment ~~3~~ of the present invention.

Fig. 6 is a flowchart showing the operation control method ~~in~~ embodiment ~~3~~ of the present invention.

DETAILED DESCRIPTION OF THE INVENTION~~DESCRIPTION OF THE PREFERRED EMBODIMENTS~~

Referring now to the drawings, preferred embodiments of the present invention are ~~–~~described in detail below.

First Embodiment~~(Embodiment 1)~~

Fig. 1 is a block diagram of an information processing system according to a first~~in~~ embodiment ~~1~~ of the present invention.

In Fig. 1A, an information processing apparatus 110 operating~~working~~ as a main controller generates an image signal by specified signal processing, and the information processing apparatus 110 transmits the image signal to an information terminal 120, which is an image display device (display apparatus) by using a radio~~ratio~~ wave outputted from a first transmitting and receiving unit 113. The information terminal (display apparatus) 120 receives this radio wave in a second transmitting and receiving unit 121, decodes the radio wave into an image signal, and displays the signal as an image in a second display unit 122.

The first display unit 111 in the information processing apparatus 110 is a CRT, ~~or~~ liquid crystal display (LCD), or~~and~~ the like. The displayed image is transmitted from the information processing apparatus 110 into the information terminal 120 without being changed or modified therebetween~~any changes~~. A first input unit 112 includes a keyboard and a mouse, and the first input unit 112 is manipulated by the user for input operations~~operation~~. A second input unit 123 of the information terminal 120 may similarly be

manipulated by a user for input operations.

The first transmitting and receiving unit 113 not only transmits the image signal to the display apparatus 120 as mentioned above, but the first transmitting and receiving unit 113 also receives the operation signal from the display apparatus 120. The operation signal is generated ~~-~~by the user's input manipulation in the second input unit 123. A radio field strength detector 114 measures the reception strength, at a predetermined time interval, when the radio wave that is transmitted from the display apparatus 120 is received in the information processing apparatus 110~~ at a predetermined time interval~~.

Based on the measuring result of the radio field strength detector 114, an out-of-range determining and informing unit 115 judges (determines) if the received radio wave strength is within a normal radio communication range for the information processing apparatus 110 and the display apparatus 120. If the received radio wave strength is out of the normal radio communication range, the out-of-range determining and informing unit 115 judges that the display apparatus 120 is out of range,~~ and~~ generates an out-of-range informing signal, and outputs the out-of-range informing signal to a locking unit 118. The locking unit 118 instructs that~~stopping of~~ display be stopped and an invalidity of an input to a display controller 116 and an input controller 117. Responsive to the instruction from the locking unit 118, the display controller 116 and the input controller 117 stop the display of the first display unit 111 and invalidate the input from the first input unit 112. At this time, alternatively, starting of the information processing apparatus 110 may be stopped.

The first processing unit 119 processes the user's operation signal input outputted from the first input unit 112 through the input controller 117, and the first processing unit 119 processes the user's operation signal input

outputted from the second input unit 123 through the transmitting and receiving units 121 and 113. The first processing unit 119 generates image signals of a moving image, a still image and text, and outputs such generated image signals~~them~~ to the first display unit 111 through the display controller 116.

Receiving this image signal, a desired image is displayed in the first display unit 111.

This image signal is also transmitted to the display apparatus (information terminal) 120 through the first transmitting and receiving unit 113, and the same image is displayed in the second display unit 122~~,~~ in the same manner as mentioned above.

The second transmitting and receiving unit 121 receives the image signal that is generated in the information processing apparatus 110, and transmits the operation signal that is generated in the display apparatus 120 by means of a radio wave.

The second display unit 122 is an LCD or the like, and the second input unit 123 is a touch panel or the like.

The second processing unit 124 generates an image signal from the reception signal that is outputted from the second transmitting and receiving unit 121, and outputs the generated image signal to the second display unit 122 via the display controller 128. Also, the second processing unit 124 outputs the operation signal to the second transmitting and receiving unit 121. The operation signal is generated by the user's input operation that is received in the second input unit 123.

In the information processing system of the first embodiment, it is supposed that the information processing apparatus 110 is installed in a specified place, and the information terminal 120 is carried, i.e., mobile, and is

usually used in a place which is remote from the information processing apparatus 110.

In the information processing system of the first embodiment having such a configuration as described above, the operation of the information processing apparatus 110 after the radio field strength detector 114 measures the received radio wave strength is explained according to the flowchart shown in Fig. 2.

Step 201:

The radio field strength detector 114 measures the radio wave strength and evaluates the radio wave strength~~, for example,~~ as, for example, "L". Then ,the process proceeds to step 202.

Step 202:

The out-of-range determining and informing unit 115 judges if the radio wave strength "L" is out of range or not. The process proceeds~~goes~~ to step 203 if the radio wave strength is out of range.~~, and~~ On the other hand, the process terminates if the radio wave strength is not out of range~~otherwise~~.

Step 203:

The locking unit 118 instructs stopping the image from being displayed and an output operation from being outputted~~of display and inputting~~ to the display controller 116 and input controller 117, respectively. The process then proceeds to step 204.

Step 204:

The display controller 116 stops the output of the image to the first display unit 111, and the input controller 117 invalidates the input operation of the user from the first input unit 112. Then, the process terminates.

Thus, according to the first embodiment, the radio field strength detector 114 judges if the radio communication with the information terminal

120 is enabled or not at a predetermined time interval. If the radio field strength detector 114 judges that the radio communication is~~judging~~ out of range and therefore the information terminal 120 is unable to communicate with the information processing apparatus 110 by radio, the display of an image outputted from the first display unit 111 and user input operation from the first input unit 112 provided in the information processing apparatus 110 are invalidated.

Therefore, if the units fail in communication with each other while the information processing apparatus 110 is installed in a specified place and the information terminal 120 is being carried (transported), an operation for the surreptitious reading, the falsifying and/or the~~and~~ erasing of data at the information processing apparatus 110 side can be prevented. If the information processing apparatus 110 itself is stolen, the internal data thereof can be protected.

In the first~~this~~ embodiment, in the combination of the information processing apparatus 110 and information terminal 120, if the units fail in communication with each other, the display and the input of the information processing apparatus 110 are stopped (invalidated).

In a~~the~~ case where~~that~~ the information terminal 120 side is provided with a radio field strength detector 125, an out-of-range determining and informing unit 126, a locking unit 127, a display controller 128 and an input controller 129.~~,~~ and ~~the~~ both sides (the information processing apparatus 110 and the information terminal 120)~~side~~ fail in communication with each other, the first embodiment~~it~~ may be also designed to stop both the display and the input of a user's operation at the information terminal 120.

In such a system, if the portable information terminal (image display device) 120 is lost or stolen, an operation for the surreptitious reading,

falsifying and/or~~and~~ erasing of data can be also prevented.

In the first embodiment, when there is a~~on the occasion of~~ failure in communication between the information processing apparatus (main controller) 110 and the information terminal (image display device) 120, the first embodiment~~it~~ is designed to stop display and input. As shown in Fig. 1B, the information processing apparatus 110 or the information terminal 120~~processing apparatus~~ may be provided with a GPS receiver as a location detector 134 or 137. The display may be stopped and the input may be invalidated if the position that is measured by the GPS receiver is out of a specified range.

In this case, too, the display and input can be stopped in the apparatus that is provided with the GPS receiver, or in the other apparatus that is not provided with the GPS receiver.

In the first embodiment, if there is a failure in ~~failing in~~ communication, the first embodiment~~it~~ is designed to stop the display and input in the midst of a process. The first embodiment~~It~~ may be also designed not to start if a third party attempts to start a particular operation by using other starting means.

Second Embodiment~~(Embodiment 2)~~

Fig. 3A is a block diagram of an information processing system according to a second~~in~~ embodiment ~~2~~ of the present invention.

An information terminal 3100, which is a first radio communication apparatus, includes a function selector 3101, a password input unit 3102, and a transmitting unit 3103.

The function selector 3101 has a function of a locking operation, an unlocking operation, or setting a password~~,~~ according to the user's instruction.

Herein, the object of the locking or unlocking ~~of~~ operation is to unlock or lock the operation of an information processing apparatus 3200 which is a

second radio communication apparatus. Similarly, the password is used for unlocking the operation of the information processing apparatus 3200.

The password input unit 3102 receives an input of a password from the user.

The transmitting unit 3103 transmits the signal that is generated in at least one of the function selector 3101 and the password input unit 3102 to the information processing apparatus 3200 by a radio wave.

A receiving unit 3201 of the information processing apparatus 3200 receives the radio wave signal that is transmitted from the information terminal 3100.

A display unit 3202 of the information processing apparatus 3200 displays data such as an image including a moving image, ~~and~~ a still image and ~~a~~ text to the user. An input unit 3203 accepts an input operation by the user of the information processing apparatus 3200.

A processing unit 3204 processes the operation signal that is generated by the input operation of the user in the input unit 3203, and displays the result of processing in the display unit 3202.

A display controller 3205 controls whether to stop or start the display of the image or other data that is output by the processing unit 3204 according to the instruction of a locking unit 3210 or an unlocking unit 3211 in the display unit 3202.

An input controller 3206 makes the user's input operation in the input unit 3203 valid or invalid depending on the instruction of the locking unit 3210 or the unlocking unit 3211.

A function determining unit 3207 judges (determines) whether the data that is received in the receiving unit 3201 is either the function of locking or unlocking operation or the function of setting the password. Accordingly, the

determining unit 3207 instructs that the locking or the unlocking of the operation of the information processing apparatus 3200 be performed or that a~~setting of~~ password is to be set to the locking unit 3210, the unlocking unit 3211, or password setting unit 3209, respectively. If the instructed function is unlocking, the received password and the content in the password memory 3208 are collated, and when matched, unlocking of the operation of the information processing apparatus 3200 is instructed to the unlocking unit 3211.

Receiving this instruction, the unlocking unit 3211 instructs unlocking of the operation to the display controller 3205 and input controller 3206, and unlocks the display unit 3202 and input unit 3203.

If the password is not matched, locking of the operation is instructed to the locking unit 3210.

Receiving this instruction, the locking unit 3210 instructs locking of the operation to the display controller 3205 and input controller 3206, and locks the display unit 3202 and input unit 3203. When a locking function is instructed, the display unit 3202 and input unit 3203 are locked.

The password memory 3208 stores the password which is necessary for unlocking the operation by the unlocking unit 3211.

The password setting unit 3209 changes the content, that is, the password stored in the password memory 3208, according to the instruction of the function determining unit 3207.

In the information processing system of the second embodiment having such a configuration as described above, the operation when the information processing apparatus 3200 receives the data that is transmitted from the information terminal 3100 is explained according to the flowchart shown in Fig. 4.

Step 401:

The receiving unit 3201 receives data, for example, "D" that is transmitted by —radio communication from the information terminal 3100, and the process then proceedsgoes to step 402.

Step 402:

The function determining unit 3207 judges if the function type of data "D" is for setting aof password or not, and if Yes, password "P" is taken out from data "D", and the process the proceedsgoes to step 403., or otherwise On the other hand, of the function determining unit 3207 judges that the function type of data "D" is not for setting a password the process then proceedsgoes to step 404402.

Step 403:

The function determining unit 3207 instructs thatregistration of password "P" be registered to the password setting unit 3209, and the password setting unit 3209 stores the password in the password memory 3208 according to the instruction, and the process is then terminated.

Step 404:

The function determining unit 3207 judges if the function type of data "D" is for a locking of the operation the information processing apparatus 3200 or not, and if Yes, the process then proceedsgoes to step 405., or otherwise On the other hand, if the function determining unit 3207 judges that the function type of data "D" is not for a locking operation, the process then proceedsgoes to step 406.

Step 405:

The locking unit 3210 instructs that thelocking of operation of the information processing apparatus 3200 to the display controller 3205 and the input controller 3206, and the display controller 3205 and the input controller 3206 stop display and input of the display unit 3202 and the input unit 3203-

~~respectively~~ according to the instruction, respectively, and the process is then terminated.

Step 406:

The function determining unit 3207 takes out password "P" from data "D", ~~and~~ compares (verifies) password "P" and the contents in the password memory 3208, and the process then proceeds~~goes~~ to step 407.

Step 407:

When the password is matched (verified), the process then proceeds~~goes~~ to step 408, or otherwise the process is terminated if the password is not matched.

Step 408:

The function determining unit 3207 instructs that the~~unlocking of~~ operation of the information processing apparatus 3200 be unlocked to the unlocking unit 3211. Accordingly, the unlocking unit 3211 instructs that the ~~unlocking of~~ operation be unlocked to the display controller 3205 and the input controller 3206.

The display controller 3205 starts display of the display unit 3202 and the input controller 3206 starts input of the input unit 3203 according to the instruction, and the process is then terminated.

Thus, according to the second embodiment, ~~from the information terminal 3100,~~ the user, from the information terminal 3100, sends the operation of locking or unlocking the~~of~~ operation of the information processing apparatus 3200 or setting of a password by radio communication to the information processing apparatus 3200. After judging the function by the function determining unit 3207, the process, according to ~~based on~~ the judgment~~judging~~ result is realized by the locking unit 3210, the unlocking unit 3211, or the password setting unit 3209. Therefore, when the information

terminal 3100 is carried by the user and the information processing apparatus 3200 is installed at a place which is remote from the user, or if the information processing apparatus 3200 is lost or stolen, the~~its~~ operation of the information processing apparatus 3200 can be locked or unlocked, or the password for operating the information processing apparatus 3200 can be set by the user from the information terminal 3100. The second embodiment therefore~~It hence~~ avoids the ill-willed operation by a third party for the surreptitious reading, falsifying or erasing the data in the information processing apparatus 3200.

In the second embodiment, the password which is stored in the password memory 3208 is used for unlocking the operation of the information processing apparatus 3200 from the information terminal 3100, which is the first radio communication apparatus.

The same password may be also used for unlocking ~~from~~ the operation of the information processing apparatus 3200, which is the second radio communication apparatus.

Alternatively~~Or~~, as shown in Fig. 3B, ~~at the information terminal,~~ in addition to the function selector 3101 and the password input unit 3102, a display unit 3104 for displaying the image, an input unit 3105 for accepting a user's general input operation, and a processing unit 3106 for processing these signals~~signal~~ may be also provided in the information terminal 3100.

Third Embodiment~~(Embodiment 3)~~

Fig. 5 is a block diagram of an information processing apparatus ~~in~~ according to a third embodiment ~~3~~ of the present invention.

In Fig. 5, a display unit 501 is a CRT, an LCD or the like, and the display unit 501 displays –specified images or text.

An input unit 502 includes a keyboard and a mouse, and accepts a

user's input operation.

A location detector 503 is connected to a GPS receiver or incorporates a GPS receiver, the location detector 503~~and~~ calculates the present~~own~~ location of the information processing apparatus of the third embodiment at ~~a~~ predetermined time intervals, and outputs the present position.

The output data of the location detector 503 contains latitude, longitude, altitude, and other information~~others~~, but, for the convenience of description in the third embodiment, only the latitude and longitude are described as being used, and the latitude and longitude expressed to the third decimal point.

An range memory 504 stores the usable range of the information processing apparatus in the third embodiment of the present invention in terms of latitude and longitude.

The content can be changed by proper means (not shown). An operation controller 505 judges if the output data of the location detector 503 is within a predetermined range of data that is stored in the range memory 504 or not. The operation controller 505 informs the judgment~~judging~~ result to a locking unit 506 or an unlocking unit 507.

If the present position of the information processing apparatus of the third embodiment is out of a specified range, an instruction is given to the locking unit 506 to stop the operation of a processing unit 509, and the information processing apparatus is disabled. Otherwise, an instruction is given to the unlocking unit 507, and the operation of the processing unit 508~~509~~ is started~~,~~ so that the information processing apparatus is enabled.

A processing unit 508 processes according to the input of a user's operation from the input unit 502, and outputs, if necessary, images including a moving image~~, and~~ a still image, and/or~~and~~ text to the display unit 501.

The operation of the processing unit 508 is stopped or started by the

instruction from the locking unit 506 or the unlocking unit 507.

In the information processing apparatus of the third embodiment having such a configuration as described above, the operation of the information processing apparatus after the location detector 503 detects the present position (of the information processing apparatus) is explained according to the flowchart shown in Fig. 6.

Step 601:

The location detector 503 detects the present position of the information processing apparatus as, for example, "P", and the process then proceedsgoes to step 602.

Step 602:

The operation controller 505 judges if the present position of the information processing apparatus is within the predetermined range that is stored in the range memory 504 or not, and if the present invention is within the predetermined range, the process then proceedsgoes to step 603., ~~and if~~ On the other hand, if the operation controller 505 judges that the present position of the information processing apparatus is out of the range, the process then proceedsgoes to step 605.

Step 603:

The unlocking unit 507 checks if the processing unit 508 is stopped or not, and if the processing unit 508 is stopped, the process then proceedsgoes to step 604., ~~or if~~ On the other hand, if the processing unit 508 is operating, the process is then terminated.

Step 604:

The unlocking unit 507 instructs a start of the operation of the information processing apparatus to the processing unit 508, and ~~terminates~~ the process is then terminated.

Step 605:

The locking unit 506 checks if the processing unit 508 is operating or not, and if the processing unit 508 is operating, the process then proceedsgoes to step 606.~~, and if~~ On the other hand, if the operation of the processing unit 508 is stopped, the process is terminated.

Step 606:

The locking unit 506 instructs stopping of the operation of the information processing apparatus to the processing unit 508, and ~~terminates~~ the process is then terminated.

For example, suppose the information processing apparatus of the third embodiment is used in an office. Suppose also that the~~The~~ office is located at an east longitude of 135 degree 34.350 min.~~,~~ and a north latitude of 34 degree 44.550 min., and that the range memory 504 is supposed to store the data of "east longitude of 135 degree 34.300 min. to 135 degree 34.400 min., and north latitude of 34 degree 44.500 min. to 34 degree 44.600 min.~~,~~". Then, the information processing apparatus operates normally in the office, but if the information processing apparatus~~it~~ is taken out of the office by an ill-willed third party and moved to a place several hundreds meters away, the information processing apparatus~~it~~ does not work, and therefore, any~~hence~~ subsequent illegal uses of the information processing apparatus can be prevented.

Thus, according to the third embodiment, the location detector 503 detects the ~~own~~ present position of the information processing apparatus at ~~a~~ predetermined time intervals, and the information processing apparatus is either operated when within a predetermined range~~, and~~ or is stopped from operating if the information processing apparatus is taken beyond~~out of~~ the predetermined range. The third embodiment~~It~~ therefore prevents the removal

of the information processing apparatus by a third party, or any surreptitious operations~~operation~~ for reading, falsifying and/or~~or~~ erasing of data in the information processing apparatus.

In the third embodiment, depending on the output of the location detector, examples of changing from an operating state to a stopped state, or from the stopped state to the operating state are shown. Alternatively, if the output of the location detector is out of the predetermined range, the location detector~~it~~ may be designed so as to control ~~so that~~ the power source of the information processing apparatus to prohibit the information processing apparatus from being~~cannot be~~ turned on.

As described herein, according to the present invention, in the system comprising apparatuses for mutual radio communication, if one apparatus is judged to be out of a predetermined range by the measurement of a received radio wave strength or detection of present position of this apparatus by GPS, the operation of this apparatus is locked. Accordingly, the system, apparatuses and methods of the present invention prevent a~~It prevents~~ third party's mischievous operation for reading, falsifying or erasing data surreptitiously. Further,~~Also~~ in the system comprising apparatuses for mutual radio communication, from the apparatus of the user's side, a locking or unlocking of the operation and setting of password of the other apparatus can be instructed. The above-described system~~It~~ similarly prevents an operation for reading, falsifying or erasing data surreptitiously.

Moreover, in an independent apparatus which incorporates~~incorporating~~ a GPS receiver, if the apparatus is out of a predetermined range, the~~its~~ operation thereof is locked, or the starting of the apparatus~~its start~~ is stopped. Thus, if the apparatus is stolen and moved to a remote place, the possibility of a third party's surreptitious operation for

reading, falsifying or erasing data can be avoided.

ABSTRACT

An~~Disclosed are the~~ information processing apparatus, an information processing~~its~~ system, and method for~~control of the~~ apparatuses of the system to be capable of preventing the surreptitious reading, falsifying and erasing of data that is stored in the apparatuses. The system comprises an information processing apparatus, a portable apparatus and other information terminals having radio transmitting and receiving units. It is judged whether the distance between the two apparatuses is within a predetermined range or not by means of a radio field strength detector or a global positioning system (GPS). If the distance between the two apparatus is not existing within a predetermined range or a~~the~~ password is not matched, some of the operations of at least one of the two apparatuses are stopped, or~~start of~~ the two apparatuses are~~is~~ stopped from ever starting to operate.